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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/055,560

01/22/2002

Mou-Shiung Lin

JCLA8532

6103

7590

01/27/2005

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EXAMINER

MITCHELL, JAMES M

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 01/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/055,560

Applicant(s)

MOU-SHIUNG LIN

Examiner

James M. Mitchell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 61-94 and 102 is/are pending in the application.
- 4a) Of the above claim(s) 64-66, 70, 71, 10-134 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 61-63, 67-69 and 72-94 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

This office action is in response to the election made October 5, 2004.

Election/Restrictions

Applicant's election without traverse of the species of Fig. 3C in the reply filed on October 25, 2004 is acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 61-63, 72-76, 78, 79, 80, 81, 83-87, 93 and 94 are rejected under 35 U.S.C. 102(e) as being anticipated by Towie et al. (U.S. 2002/007044).

Towie discloses (cl.61) a chip packaging method comprising: providing a bulk metal substrate (302) without conductive traces; providing a plurality of dies (314; Fig 22, Par. 0038), wherein each die has an active surface (i.e. portion next to 324), a backside (318) that is opposite to the active surface, and a plurality of metal pads (324) located on the active surface; mounting the dies onto the bulk metal substrate (Par. 0038), the backside of the dies facing the bulk metal substrate; and forming a plurality of patterned lines (120) over the active surface of the dies, wherein the patterned lines are constructed from at least a

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patterned wiring layer (Par. 0024); (cl. 62, 63) wherein the dies perform same functions or different functions ¹(Par. 0027); (cl. 72,) further forming a dielectric (33, Fig 33) before patterning that is a polymer (Par. 0023); (cl. 73) with the dielectric porous (i.e. all material have a degree of porosity); (cl. 74, 76) and dielectric (layers of 130) over the patterned lined (Fig 30).; (cl. 78, 79) depositing a plurality of bonding points/ solder balls (i.e. portion of ball, 258, contacting pad last) on a plurality of bonding pads of the patterned lines (114; Fig. 34) after forming the patterned; (cl. 80) singulation process (Par. 0045); (cl. 81) each package with a single die (Fig 20, 31); (cl. 83) where the step of forming patterned lines comprise forming a single patterned wiring layer (i.e. bottom single layer formed); (cl. 84) with dielectric between the patterned wiring layers (Fig 30); (cl. 85) and dielectric material is porous (all material have a degree of porosity); (86, 87) with passive components over the active surface (i.e. wiring layers by way of metal, dielectric, metal with a current going through forms a capacitor); (cl. 93, 94) with the substrate made from copper or aluminum (Par. 0026, 0038)

Claims 61-63, 67, 68, 72-76, 78-87, 93 and 94 are rejected under 35 U.S.C. 102(e) as being anticipated by Mu et al. (U.S. 2002/0070443).

Mu discloses (cl.61) a chip packaging method comprising: providing a bulk metal substrate (102) without conductive traces; providing a plurality of dies (104), wherein each die has an active surface (i.e. portion next to 122), a

¹ The disclosure indicates that each dice/chip can be several different types, which either all of

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backside (104) that is opposite to the active surface, and a plurality of metal pads (122) located on the active surface; mounting the dies onto the bulk metal substrate, the backside of the dies facing the bulk metal substrate; and forming a plurality of patterned lines (128) over the active surface of the dies, wherein the patterned lines are constructed from at least a patterned wiring layer (Par. 0034); (cl. 62, 63) wherein the dies perform same functions or different functions¹ (Par. 0026); (cl. 67) further disclosing a first metal (112) with a plurality of openings/cavities (i.e. space filled with chip) and a second metal layer (102) with the pattern lines formed over the second layer; (cl.68) with the first metal approximately equal to the thickness of the dies (Fig. 14); (cl. 72) that is a polymer (Par. 0027); (cl. 73) further forming a dielectric (108, 132, Fig 12) before patterning (140).; (cl. 73, also 85) with the dielectric benzocyclobutene (Par. 0035); (cl. 74) and dielectric (142) over the patterned lined (Fig 18); (cl. 78, 79) depositing a plurality of bonding points/solder balls (i.e. portion of ball, 144, contacting pad) on a plurality of bonding pads of the patterned lines after forming the patterned lines (136) over the active surface of the dies (Fig 18, Fig 19); (cl. 80) singulation process (Par. 0041); (cl. 81) each package with a single die (Fig 22); (cl. 82) with each package having a plurality of dies (Fig. 24); (cl. 83) where the step of forming patterned lines comprise forming a single patterned wiring layer (Fig 16; i.e. bottom single layer formed); (cl. 84) with dielectric (132, 142) between the patterned wiring layers (Fig 19); (cl. 85) and the dielectric is porous (all material have a degree of porosity); (cl. 93, 94) with the substrate made from

the chips being the same or different.

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copper or aluminum (Par. 0024, 0029); (86, 87) with passive components over the active surface (i.e. wiring layers by way of metal, dielectric, metal with a current going through forms a capacitor).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 67 is rejected under 35 U.S.C. 103(a) as being unpatentable over Towie et al. (U.S. 2002/007464) as applied to claim 61 and further in combination with Mu (U.S. 2002/10070443).

Towie further discloses an opening/cavity (304) in the metal substrate (Fig 22,23) with the backside of the chips/dies mounted to a bottom of the cavity (Fig 31).

Towie does not appear to explicitly disclose that the metal substrate is formed of a first and second metal.

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Mu discloses a cavity formed of a first and second metal (102, 112; Fig 19).

It would have been obvious to form the cavity from a first and second metal layer since multiple pieces being made integral are functional equivalents and have been held to be mere choice. See In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965) (that the use of a one piece construction instead of the structure disclosed would be merely a matter of obvious engineering choice.)

Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mu et al. (U.S 2002/0070443) as applied to claim 67 and further in combination with Juskey et al. (U.S 6,507,102).

Mu does not show forming holes by punching.

Juskey teaches forming holes by punching (Col 4, Lines 53-55).

It would have been obvious to one of ordinary skill in the art to form the hole /opening of Mu by punching in order to form a hole as is required by Mu (Fig.8).

Claims 88-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mu et al. (U.S 2002/0070443) as applied to claim 67 and further in combination with Tahara et al. (U.S 2002/0017730).

Mu does not appear to show passive components MMEMS, resistor, filter or wave above the active component.

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Tahara utilizes passive components such as a filter or wave above the active component (Par. 0069).

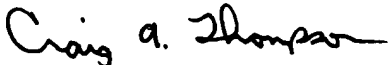
It would have been obvious to one ordinary skill in the art to incorporate such passive components in order to provide a wireless function as taught by Tahara (Par. 0069).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**CRAIG A. THOMPSON
PRIMARY EXAMINER**

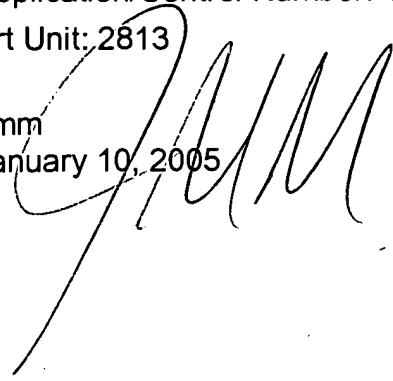
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Jmm

January 10, 2005

A large, stylized handwritten signature in black ink, likely belonging to Jmm, is written over the text and extends across the upper portion of the page.